

REMARKS

Claims 1 and 3-7 are pending in this application. By this Amendment, claims 1, 3, 6 and 7 are amended. Support for the amendments to these claims may be found in original claim 2, for example. No new matter is added. A Request for Continued Examination is attached. Reconsideration of the application in view of the above amendments and following remarks is respectfully requested.

The Office Action rejects claims 1-7 under 35 U.S.C. §103(a) over JP 2002-334712 to Kawai in view of JP 10-319054 to Haniyu. This rejection is respectfully traversed.

The claims are amended only for the purpose of advancing prosecution, because Applicants do not concede the propriety of the current rejections, as discussed below. In particular, the independent claims are amended based on claim 2 to recite "setting the output terminal voltage of said fuel cell to the open circuit voltage during a period that the moving object does not require power generation by said fuel cell."

The Office Action asserts that the feature recited in claim 2 is obvious in view of Kawai. The Office Action cites paragraph [0026] in Kawai as disclosing the recited subject matter. The Office Action's assertions in this regard are incorrect.

The Office Action asserts that, according to Kawai, "the operation is carried out repeatedly with no restrictions." Claim 1 recites, however, "setting an output terminal voltage of said fuel cell to an open circuit voltage," which may result in there being no current running from the fuel cell, as discussed in Applicants' specification (e.g. paragraph [0031]). Further, the Office Action combines Kawai with Haniyu, which requires that the current is zero. Contrary to the assertion in the Office Action, it would not have been obvious to stop all current from running from a fuel cell in a vehicle "repeatedly with no restrictions," because fuel cell vehicles often and regularly require power from the fuel cell to operate. In particular, when the capacity of the secondary battery is too low to handle the entire power demand

itself, the vehicle will require power from the fuel cell to operate (see paragraph [0030] of this application). Otherwise, the vehicle may stall (e.g. stall in mid-traffic). Thus, the particular timing recited in claim 1 would not have been obvious in view Kawai's disclosure of performing an operation "repeatedly with no restrictions," because performing the operation repeatedly and without restriction may result in the fuel cell system failing in mid-traffic.

Additionally, Applicants provide the following discussion of the remaining features recited in the independent claims. The Office Action concedes that Kawai does not disclose determining the offset correction value for said current detector by setting the output terminal voltage of said fuel cell to the open circuit voltage via said voltage converter. The Office Action asserts that Haniyu supplies the missing subject matter. The Office Action's assertion in this regard is incorrect, as discussed below.

Claim 1 recites "setting an output terminal voltage of said fuel cell to an open circuit voltage via said voltage converter." Independent claims 6 and 7 recite similar features. Thus, claim 1 recites a relationship between two things: (1) an open circuit voltage and (2) a voltage converter. The relationship is that (1) is "set ... via" (2). Haniyu does not disclose, and would not have suggested, this relationship.

One may allege that Haniyu discloses (1), based on Haniyu's disclosure of "in case a current is zero" or "when a current is zero," (paragraphs [005], [0007], [0013], [0015], for example). But the mere disclosure of zero current would not further disclose "setting an output terminal voltage of said fuel cell to an open circuit voltage via said voltage converter." That is, the mere disclosure of (1) would not further disclose the relationship that (1) is set via (2).

Haniyu does not disclose how the current becomes zero. In the April 23, 2008 personal interview, Examiner Ramadan pointed to paragraph [0025] in Haniyu as disclosing

the recited subject matter. Paragraph [0025] does not disclose the particular relationship discussed above.

Paragraph [0025] does not disclose that a voltage converter makes the current zero, because that paragraph discusses a situation in which the current is already zero. In particular, paragraph [0025] discloses that electrical-potential-difference compensator 2 adds a correction voltage V_s to the output V_0 of current sensor 1 "when the current which flows to a current sensor 1 is zero." In that case, the current is already zero. The current sensor gives an output based on the current, which is already zero, and then the compensator corrects the output of the sensor. Because the current is already zero, Haniyu does not disclose, and would not have suggested, using the compensator to "set an output terminal voltage of said fuel cell to an open circuit voltage," as recited in claim 1. Further, careful review of Drawing 6 in Haniyu shows that the compensator 2 is removed, and separated by an op-amp, from the line where the sensor senses. Thus, the compensator cannot set any current or voltage value at that line being sensed (as explained in the May 14, 2008 Amendment). Accordingly, even if the Examiner alleges that Haniyu discloses (1) an open circuit voltage and a (2) voltage converter, Haniyu does not disclose the relationship that (1) is set via (2). Haniyu does not disclose that the compensator 2 or any other device sets an open circuit voltage, and in general does not disclose how the current is made to be zero.

Current may become zero in a fuel cell system for multiple reasons, but the particular method recited in claim 1 is non-obvious, as discussed below. One method to make the current zero is simply to stop the fuel cell. This method has the obvious disadvantage of requiring that the fuel cell be stopped and restarted. In contrast, this application discloses the non-obvious method of making the current zero "even when the fuel cell 21 is not stopped," (paragraph [0031]). Thus, this application discloses a system that avoids the disadvantage of stopping the fuel cell.

How the system achieves the above benefit may be explained with respect to Fig. 1 and the specification. Voltage converter 313 sets "an output terminal voltage of said fuel cell [e.g. the connection between voltage converter 31 and power supply lines 411 in Fig. 1] to an open circuit voltage [e.g. 400 V; paragraph 0031]." Because the voltage at the connection between the voltage converter 31 is the open circuit voltage of the fuel cell, no current runs on the power supply lines 411, even when operation of the fuel cell is not stopped. As explained above, neither Haniyu nor Kawai disclose this particular, non-obvious manner of making the current zero without stopping the fuel cell. Thus, the independent claims recite subject matter that proceeds contrary to accepted wisdom in the prior art and provides a solution to a disadvantage of the prior art, which are indications of non-obviousness (MPEP §2145 X.D.3.).

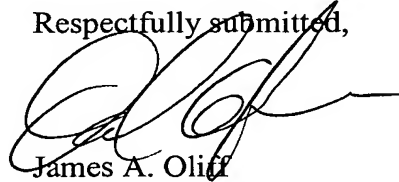
In view of the above, the applied references would not have suggested the combinations of features recited in claims 1, 6 and 7. Thus, the applied references would not have suggested the combinations of features recited in claims 3-5 for at least the respective dependence of these claims on an allowable base claims, as well as for the separately patentable subject matter that each of these claims recites.

Accordingly, reconsideration and withdrawal of the rejection under 35 U.S.C. §103(a) are respectfully requested.

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1 and 3-7 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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Attachments:

Petition for Extension of Time
Request for Continued Examination

Date: December 24, 2008

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